

Male Body Image: The Roles of Sexual Orientation and Body Mass Index Across Five National U.S. Studies

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Recent reviews have challenged the view that gay men are at higher risk than heterosexual men for developing poor body image. The current project examined the extent to which gay and heterosexual men differed on measures related to body image. We also examined whether body mass index (BMI) moderated the association between sexual orientation and body image. Across 5 studies, 111,958 heterosexual men and 4,398 gay men completed surveys assessing different aspects of body image. Gay men generally reported lower body satisfaction than heterosexual men, but these differences were typically small (most d s < .20). Gay men were more likely than heterosexual men to report dissatisfaction with their physical appearance (29 vs. 21%) and muscle size/toned (45 vs. 30%), but not weight (44 vs. 39%). Gay men were also more likely to agree that they experienced objectification ($d = .40$; 77% agree vs. 61% agree), surveillance ($d = .50$; 58 vs. 39%), appearance-based social comparison ($d = .45$; 68 vs. 51%), and pressure from the media to be attractive ($d = .68$; 58 vs. 29%). Odds ratios showed that gay men were more likely to consider cosmetic surgery (3.96), use diet pills (2.59), diet in the past year to lose weight (1.84), and avoid sex because of body dissatisfaction (6.28). BMI was a strong predictor of body dissatisfaction in men, but did not consistently moderate the association between sexual orientation and body image. Differences between heterosexual and gay men were largest on measures assessing body modification and perceived sociocultural pressures.

Keywords: body image, gay men, heterosexual men, objectification theory, social comparison theory

Men who are lean and muscular are routinely featured as attractive in popular media (Frederick, Fessler, & Haselton, 2005; Leit, Gray, & Pope, 2002). The average man, however, differs substantially from these ideals, and many men are dissatisfied with their bodies and appearance (Fallon, Harris, & Johnson, 2014; Fiske, Fallon, Blissmer, & Redding, 2014; Frederick, Bohrnstedt, Hatfield, & Berscheid, 2014; Frederick, Jafary, Gruys, & Daniels, 2012; McCreary & Sasse, 2000; Ridgeway & Tylka, 2005). Many men are dissatisfied with both their body fat levels and degree of muscularity (Frederick, Buchanan, et al., 2007; Gray & Frederick, 2012), and body dissatisfaction is particularly prevalent among very slender and heavy men (Fallon et al., 2014; Frederick, Forbes, Grigorian, & Jarcho, 2007).

Men who are dissatisfied with their bodies are more likely to report disordered eating patterns, poorer health-related quality of life, psychological distress, depressive symptoms, lower self-

esteem, and negative affect (Bergeron & Tylka, 2007; Tylka, 2011; Wilson, Latner, & Hayashi, 2013). The serious consequences of poor body image make it critical to identify groups at heightened risk of body dissatisfaction. Researchers have traditionally considered gay men to be at increased risk for harmful body image concerns and disordered eating patterns (Morrison, Morrison, & Sager, 2004). This view that gay men are at higher risk, however, has recently been challenged (Kane, 2009, 2010). In this paper we discuss the social pressures that may produce differences in body image between gay versus heterosexual men, examine the existing research on these differences, and present the results of five national studies examining these differences.

Expecting Poorer Body Image Among Gay Versus Heterosexual Men

Several lines of reasoning have led researchers to posit that gay men will be more likely to experience body dissatisfaction than heterosexual men. One relevant factor that differs between gay and heterosexual men is that gay men are attempting to attract men. Although women can be selective about a partner's appearance (Frederick & Haselton, 2007; Fales et al., 2016), men are even more likely than women to care about appearance when seeking a long-term partner (Buss, 1989; Fales et al., 2016; Kenrick & Keefe, 1992; Li & Kenrick, 2006). Both heterosexual and gay men consider physical attractiveness to be more important in a partner than do heterosexual and lesbian women (Bailey, Gaulin, Agyei, & Gladue, 1994; Legenbauer et al., 2009). Consequently, gay men are attempting to attract partners who, on average, are relatively

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more appearance-discriminating than the partners sought by heterosexual men. This could increase the extent to which gay men experience social pressure to be attractive and negatively impact body image.

The pressure to be sexually attractive is highlighted by objectification theory (Fredrickson & Roberts, 1997), which posits that the treatment of women as sexual objects by men leads women to view themselves as sexual objects. This objectification leads to “surveillance”: monitoring how one appears to the outside world. If gay men experience heightened pressures to be attractive from other men, they may feel objectified and engage in more surveillance, which is associated with poorer body image in men (Fredrick, Forbes et al., 2007). Consistent with this prediction, past research has found that, compared to heterosexual men, gay men experience higher rates of sexual objectification (Engeln-Maddox, Miller, & Doyle, 2011), self-objectification (Kozak, Frankenhauser, & Roberts, 2009), and surveillance (Engeln-Maddox et al., 2011; Kozak et al., 2009; Martins, Tiggemann, & Kirkbride, 2007; Michaels, Parent, & Moradi, 2013).

Sociocultural theory and the tripartite influence model further highlight factors that shape body image, and focus on the role that peers, parents, and media play in determining body dissatisfaction (Schaefer et al., 2015; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). In three studies, gay men reported being more influenced than heterosexual men by appearance ideals in the media (Austin et al., 2004; Carper, Negy, & Tantleff-Dunn, 2010; McArdle & Hill, 2009). Tylka and Andorka (2012) expanded this model to examine partner pressures and gay community involvement, finding that perceived appearance pressures from partners were linked to dissatisfaction with weight and muscularity among gay men, and that gay community involvement was linked to engaging in behaviors designed to build muscularity.

Some media aimed at gay men also facilitate an acceptance of sexual objectification. One study explored images of men in two popular magazines targeted toward gay men, *The Advocate* and *Out Magazine*, and found a higher rate of images of men who had low levels of body fat and/or high levels of muscularity than those found in publications geared toward the general public (Schwartz & Andsager, 2011). Consistent with social comparison theory, which posits that people evaluate their worth by comparing themselves to others (Festinger, 1954), men who engage in more appearance-related social comparisons report poorer body image (Warren & Rios, 2013). If gay men experience greater pressures to be attractive than heterosexual men, they may be more sensitive to sociocultural influences, prone to engage in appearance comparisons, and likely to experience body dissatisfaction.

Evidence of Poorer Body Image Among Gay Versus Heterosexual Men

Consistent with the idea that gay men face higher appearance-related social pressures, a number of studies have found significantly poorer body satisfaction in gay men relative to heterosexual men. For example, in an online study of 776 adult men, gay men were more likely than heterosexual men to report low evaluations of their appearance (32% vs. 24%) and high overweight preoccupation (25 vs. 12%; Peplau et al., 2009; Study 1). Similarly, a meta-analysis of 20 studies found that gay men had poorer body

image than heterosexual men (Morrison et al., 2004). Although the effect size was relatively small ($d = .29$), it should be noted that the gay men in several of these studies were thinner on average than heterosexual men. The difference in body image between gay and heterosexual men was larger in studies where the groups were equivalent in body mass index (BMI; $d = .33$) than in studies where gay men had lower BMI than heterosexual men ($d = .18$). In six studies that employed the widely used Body Dissatisfaction Subscale of the Eating Disorder Inventory, the effect size was moderate ($d = .40$).

Research has also examined differences between gay and heterosexual men's perceptions of how body dissatisfaction impacts their lives. In an online sample, gay men ($n = 130$) were more likely than heterosexual men ($n = 646$) to state that their feelings about their bodies had a negative effect on their overall quality of life (24 vs. 13%; $d = .37$), and to report that their feelings about their bodies had a negative effect on their sex life (42 vs. 22%; $d = .43$; Peplau et al., 2009; Study 1). In another study, gay men were more likely than heterosexual men to be fearful of becoming fat, to be dissatisfied with their muscularity, and to diet (but not to exercise; Kaminski, Chapman, Haynes, & Own, 2005).

Challenges to the Claim of Poorer Body Image Among Gay Versus Heterosexual Men

Based on the existing literature, researchers have generally concluded that gay men are at higher risk than heterosexual men for developing body dissatisfaction and disordered eating patterns. This conclusion and the accompanying research, however, have been subjected to critical evaluation (Kane, 2009, 2010). Kane suggested that the emphasis on gay men's concerns over appearance are rooted in stereotypes about gay men being hypersexual and that the framing of this research unnecessarily pathologizes gay men. Kane also drew attention to the fact that some widely cited studies are based on very small samples.

Additionally, he critiqued the differential recruitment of gay and heterosexual men in the prior literature. He noted that gay participants are often drawn from sources such as gay-affiliated political and support organizations and websites, and thus may differ in their overall mental health and body image compared to other gay men. For example, people associated with LGBT groups have an additional source of social support, and social support is linked to better physical and mental health (Thoits, 2011). Alternatively, gay men recruited from gay-affiliated organizations might be more exposed to objectification and media targeting gay men, causing them to have lower body satisfaction than other gay men.

Kane also noted that the effect sizes from these studies, although statistically significant, have been small. For example, the Morrison et al. (2004) meta-analysis reveals only a small to moderate difference in body image. Kane contended that these small effect sizes do not warrant sweeping conclusions about gay versus heterosexual men. Finally, he claimed that much of the literature has failed to conform to appropriate statistical practices, including treating Likert-scale as interval rather than ordinal, although this is a common practice in psychology (Norman, 2010).

Aims of Current Project

To address the limitations of the existing research comparing body image in gay versus heterosexual men, we present the results

of five studies in which participants were recruited from the official website of NBC News. Participants were not recruited based on sexual orientation or from political/support groups, but rather agreed to participate in online surveys on a variety of different topics. As a result, these studies do not suffer from the biased recruitment methods inherent in most other studies on body image among gay versus heterosexual men. These samples include substantially more heterosexual men ($N = 111,958$) and gay men ($N = 4,398$) than the most recent meta-analysis (Morrison et al., 2004; $N = 1,387$ heterosexual men vs. $N = 984$ gay men), and allow us to examine whether the link between sexual orientation and body image varies according to body mass.

Research Hypotheses

Although Kane (2009, 2010) raises important questions about the validity of conclusions based on the existing literature, it is noteworthy that the majority of research investigating body image and eating behavior in men has found, to varying extents, elevated levels of body dissatisfaction, eating disorder pathology, and weight preoccupation among gay men. We hypothesized that meaningful differences between gay and heterosexual men do indeed exist.

Hypothesis 1: Gay men will report lower body satisfaction than heterosexual men.

Hypothesis 2: Gay men will report greater investment in appearance and interest in body modification strategies than heterosexual men.

Hypothesis 3: Gay men will report more appearance-related pressures and comparisons. Specifically, we examined whether gay men feel more judged by their looks (objectification), think more about how they look during the day (surveillance), compare their appearance to others more often (social comparison), and perceive more pressure from the media and their dating partners to be attractive (media pressure, partner pressure).

Hypothesis 4: Gay men will report more substantial impacts of body dissatisfaction on their sex life than heterosexual men.

Hypothesis 5: BMI will moderate the link between sexual orientation and body image, with differences between gay and heterosexual men being greater at higher BMIs.

Method

The methods for Studies 1–5 were nearly identical in terms of participant recruitment, with only the specific body image items varying across the studies. To conserve space, we first give an overview of the studies and organize the results section by hypothesis rather than by study. Sample demographics are reported in Table 1 and the specific items asked in each survey are presented in Table 2. Unfortunately, ethnicity was not assessed in four of the five surveys, and sample sizes of non-White gay participants were insufficient for data analysis. Thus, body image data related to ethnicity are not reported. Height, weight, and age were self-reported by participants. Across the studies, participants were male, aged 18–65, with BMIs of 14.5–50.5 based on self-reported height and weight, and self-identified as “gay” and “heterosexual” in response to a question asking participants to define their sexual orientation as heterosexual, bisexual, or gay/lesbian. BMI was not assessed in Study 5.

Although some past researchers have combined bisexual and gay men, often due to low sample sizes of each, others have critiqued this approach for assuming equivalence between gay and bisexual men (e.g., Kane, 2010). The experience of dating both men and women could have unique effects on body image. Unfortunately, we do not have the gender of bisexual men’s partners in these studies. Given the challenges of comparing two groups on 30 outcome variables across five studies in a succinct manner, let alone comparing three groups, we focused these analyses on comparing men who self-identified as gay versus heterosexual. We are, however, reporting the results for bisexual men from Study 3 in a separate manuscript examining the links between personality, attachment style, self-esteem, and body image (Frederick, Sandhu, Morse, & Swami, 2016). The results comparing lesbian and heterosexual women are reported in a separate manuscript (Frederick, Allyn, Smolak, & Murnen, 2016).

Overview of Surveys and Participant Recruitment

The present manuscript is based on analyses of five surveys posted on the official news website of NBC News (currently NBCNews.com, formerly MSNBC.com) and additional websites for two weeks each in 2003, 2006, 2010, 2011, and 2012. The surveys ranged from approximately 25–150 questions. Banner advertisements for the surveys appeared on the main page and subsections web page. Importantly, the invitations for the 2006–

Table 1
Key Demographics in Studies 1–5

Study	Sample size		Age			BMI			Underweight		Normal		Overweight		Obese	
	Het	Gay	Het	Gay	<i>d</i>	Het	Gay	<i>d</i>	Het	Gay	Het	Gay	Het	Gay	Het	Gay
	<i>n</i>	<i>n</i>	<i>M (SD)</i>	<i>M (SD)</i>		<i>M (SD)</i>	<i>M (SD)</i>		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1	25,714	1,523	37 (12)	35 (10)	.18***	26.6 (4.1)	25.4 (4.2)	.34***	1	2	37	52	43	32	18	14
2	11,138	332	45 (12)	40 (12)	.42***	28.1 (4.8)	26.5 (5.2)	.32***	1	3	25	40	46	35	28	21
3	2,820	417	50 (11)	47 (11)	.27***	29.1 (5.3)	27.4 (5.2)	.32***	0	0	20	36	44	41	36	23
4	31,349	731	40 (11)	38 (10)	.19***	27.7 (4.4)	25.9 (4.3)	.42***	1	1	28	50	47	34	24	15
5	40,937	1,395	41 (11)	39 (11)	.18***											

Note. Het = heterosexual men; Gay = gay men. Comparisons of heterosexual and gay men using independent samples *t*-tests revealed that gay men were somewhat thinner than heterosexual men on average.

*** $p < .001$.

Table 2
 Item Names, Response Options, and Categories Indicating or Predicting Poor Body Image

Variable name	Question	Response options	Poor body image
Hypothesis 1			
<i>Self-rated attractiveness</i> (+) (S1)	How do you feel about your body?	<i>Continuous: I have a great body = 4 to I find my body unattractive = 1.</i>	<i>Poor: 1 vs 2–4 (I find my body unattractive = 1)</i>
<i>Image of face</i> (+) (S1)	How do you feel about your face?	<i>Continuous: My face is . . . very attractive = 4, nice/pleasant = 3, plain = 2, unattractive = 1.</i>	<i>Poor: 1 vs 2–4 (My face is unattractive = 1)</i>
<i>Comfort in a swimsuit</i> (+) (S1)	How do you think you look in a swimsuit?	<i>Continuous: Good; I'm proud/not at all embarrassed to be seen in a swimsuit = 3 to So uncomfortable that I avoid wearing one in public = 1.</i>	<i>Poor: 1 vs. 2–3 (So uncomfortable that I avoid wearing one in public = 1)</i>
<i>Self-conscious about weight</i> (–) (S1)	Are you self-conscious about your weight?	<i>Categorical: "Yes, I'm too thin," "Yes, I'm too heavy," and "No."</i>	<i>Poor A: "Too thin" Poor B: "Too heavy" (Each = 1 vs. No + other category)</i>
<i>Physical appearance</i> (+) (S2, 3, 5)	How dissatisfied or satisfied are you with your physical appearance?	<i>Continuous: Very Dissatisfied = 1 to Neutral = 4 to Very Satisfied = 7.</i>	<i>Poor: 1–3 vs. 4–7 (Dissatisfied = 1)</i>
<i>Satisfied with weight</i> (+) (S2, 3).	How dissatisfied or satisfied are you with your weight?	<i>Continuous: Very Dissatisfied = 1 to Neutral = 4 to Very Satisfied = 7. End points Extremely in Study 2.</i>	<i>Poor: 1–3 vs. 4–7 (Dissatisfied = 1)</i>
<i>Satisfied with muscle size and tone</i> (+) (S2)	How dissatisfied or satisfied are you with your muscle size and tone?	<i>Continuous: Very Dissatisfied = 1 to Neutral = 4 to Very Satisfied = 7.</i>	<i>Poor: 1–3 vs. 4–7 (Dissatisfied = 1)</i>
<i>Self-ideal discrepancy</i> (+) (S2)	My current body is pretty close to the body I would ideally like to have.	<i>Continuous: Strongly Agree = 1 to Strongly Disagree = 4.</i>	<i>Poor: 3–4 vs. 1–2 (Disagree = 1)</i>
<i>Attractiveness rating</i> (+) (S2)	Compared to most people my age, I would say that I am . . .	<i>Continuous: Extremely Unattractive = 1, Average = 5, Extremely Attractive = 10.</i>	<i>Poor: 1–4 vs. 5–10 (Below Average = 1)</i>
Hypothesis 2			
<i>Mirror checking</i> (–) (S1)	Be honest: about how many times per day do you check yourself out in a mirror?	<i>Categorical: Never = 1, 1–3 = 2, 4–7 = 3, and 8+ times = 4.</i>	<i>Poor: 4 vs. 1–3 ("Eight or more times" = 1)</i>
<i>Body modification</i> (–) (S2)	Which of the following apply to you? Please check all that apply.	<i>Categorical for each item: "I've been on a weight-loss diet sometime in the past year," "I've tried exercising to lose weight sometime during the past year," "I've taken diet pills to control my weight in the past year," "I've had cosmetic surgery," and "I would consider having cosmetic surgery." Yes = 1 or No = 0.</i>	<i>Poor: Weight loss diet Poor: Exercise to lose weight Poor: Diet pills Poor: Had cosmetic surgery Poor: Consider surgery Poor: Any modification (Each = 1 vs. No = 0)</i>
Hypothesis 3			
<i>Objectification</i> (–) (S2)	I feel that people judge me based on my looks.	<i>Continuous: Strongly Disagree = 1 to Strongly Agree = 4.</i>	<i>Poor: 3–4 vs. 1–2 (Agree = 1)</i>
<i>Surveillance</i> (–) (S2)	During the day, I often think about how I look.	<i>Continuous: Strongly Disagree = 1 to Strongly Agree = 4.</i>	<i>Poor: 3–4 vs. 1–2 (Agree = 1)</i>
<i>Social comparison</i> (–) (S2)	At social events, I compare my appearance to the appearance of others.	<i>Continuous: Strongly Disagree = 1 to Strongly Agree = 4.</i>	<i>Poor: 3–4 vs. 1–2 (Agree = 1)</i>
<i>Media pressure</i> (–) (S2)	I feel pressure to have a more attractive body from magazines and television.	<i>Continuous: Strongly Disagree = 1 to Strongly Agree = 4.</i>	<i>Poor: 3–4 vs. 1–2 (Agree = 1)</i>

(table continues)

Table 2 (continued)

Variable name	Question	Response options	Poor body image
<i>Partner pressure</i> (–) (S2)	My dating/marriage partner pressures me to lose weight	<i>Categorical: Yes</i> = 1 or <i>No</i> = 0.	<i>Poor: Yes</i> vs. <i>No</i> (<i>Yes</i> , feel pressure = 1)
Hypothesis 4			
<i>Hide during sex</i> (–) (S1)	Do you ever try to hide a least favorite physical feature(s) during sex? Select all that apply	<i>Categorical: “Yes, my breasts/chest,” “yes, my stomach,” “yes, my butt/thighs,” “yes, my genitals,” “yes, other”</i>	<i>Poor: Hide Chest</i> <i>Poor: Stomach</i> <i>Poor: Butt/Thighs</i> <i>Poor: Genitals</i> <i>Poor: Other</i> (<i>Each</i> = 1 vs. <i>No</i> = 0)
<i>Body parts hidden</i> (–) (S1)	Total number of body parts hidden endorsed on “Hide during sex”	<i>Continuous: 0–5</i> parts hidden.	<i>Poor: 1 or more</i> body parts hidden vs. 0 (<i>1+ hidden</i> = 1).
<i>Doesn’t undress in front of partner</i> (–) (S1)	Do you undress in front of your partner?	<i>Categorical: Doesn’t Undress</i> = 1 vs. <i>Does Undress</i> = 0.	<i>Poor: Doesn’t Undress</i> vs. <i>Does Undress</i> (<i>Doesn’t Undress</i> = 1)
<i>Avoid sex past month</i> (–) (S4)	During the past month, have any of the following circumstances caused you NOT to have sex with your partner? Please select all that apply . . . My feelings about my body make me less interested in sex.	<i>Categorical: Yes</i> = 1 or <i>No</i> = 0.	<i>Poor: Yes</i> vs. <i>No</i> (<i>Yes, Avoid Sex</i> = 1)

Note. Items with a (+) indicate that higher scores on the variable indicate more positive body image (e.g., higher scores on self-rated attractiveness indicate higher body satisfaction). Items with a (–) indicate that higher scores on the outcome variables indicate worse body image (e.g., greater appearance pressures or greater body modification interest or behavior). Next to these symbols we indicate which study the item came from (e.g., S1 = Study 1). The Poor body image column includes the categorical variable that was created to indicate whether participants fell on ends of the Likert scale indicating low body satisfaction (e.g., *dissatisfied with physical appearance*, 1–3, vs. all other responses, 4–7) or that would be predictive of low body satisfaction (e.g., agree that engages in social comparison). For all Poor body image variables, the response indicating poor body image = 1 and other response(s) = 0. S1 = Study 1; S2 = Study 2; S3 = Study 3; S4 = Study 4; S5 = Study 5.

2012 surveys did not specify that the surveys were on body image but rather on other topics (e.g., “The Sex, Stress, and Success Survey”). A software program denied multiple responses from any given computer to prevent people from completing the survey more than once. Each question or set of questions was presented on a different page, and participants could only advance to the next question if they answered the previous question. Only participants who completed the full survey were included in the analyses. The secondary analyses were conducted on anonymous survey data collected by a private organization and are therefore IRB exempt (Category 4, National Institutes of Health, 2010). Consistent with standard ethical guidelines, however, participants read a consent form, continued to the survey if they agreed to participate, could drop out of the survey at any time, and participated voluntarily without remuneration.

Market research on NBCNews.com shows that, at the time of the surveys, it routinely ranked among one of the most popular websites in the United States. Its 58 million unique monthly visitors include a broad diversity of people in terms of age, income, and political orientation (NBCNews.com, 2012). It is important to note that MSNBC.com, the general news website, was a different entity than MSNBC TV and had substantially different demographics, including approximately equal numbers of Democrat and Republican visitors. Datasets on various topics garnered through this site between 2002 and 2012 have been used to examine mate preferences (Fales et al., 2016), sexual jealousy (Frederick & Fales, 2016), sexual satisfaction in long-term relationships (Frederick, Lever, Gillespie, & Garcia, in press), sexual regrets (Galperin et al., 2013), sexual experience (Frederick & Jenkins, 2015), gender differences in beliefs about who should pay for dates (Lever, Frederick, & Hertz, 2015), friendship (Gillespie,

Frederick, Harari, & Grov, 2015; Gillespie, Lever, Frederick, & Royce, 2015), and aspects of body image (Frederick, Lever, & Peplau, 2007; Frederick, Peplau, & Lever, 2006, 2008; Lever, Frederick, Laird, & Sadeghi-Azar, 2007; Lever, Frederick, & Peplau, 2006; Peplau et al., 2009).

The surveys were posted on multiple websites. In Studies 2, 4, and 5, we restricted all analyses to participants who came directly from the NBC website because it is a widely accessed website not specifically focusing on issues related to fashion, gender, or lifestyles. In Study 3, we also included participants who completed the survey via the Today.com website.

Survey Details

Study 1: 2003 Sex and Body Image Survey. A survey was posted on the MSNBC.com and ELLE.com websites. In this first survey, there was no way to separate out which specific participants came from the MSNBC.com versus ELLE.com websites, but based on web traffic statistics to the survey from each site, we estimate that 98–99.9% of the sample came from MSNBC.com. Participants completed body image items, which were reported in Peplau et al. (2009). This paper reanalyzes the results comparing gay and heterosexual men in response to statistical concerns raised by Kane (2009, 2010), presenting statistical tests for percentage-based differences and adding regression analyses with controls such as BMI and age. Here we also present all relevant variables from the dataset, some of which were not originally reported because they did not assess body dissatisfaction per se (e.g., interest in cosmetic surgery).

Study 2: 2010 Sex, Stress, and Success Survey. Over 99.9% of male participants completed the survey through the MSNBC.com

website and only these participants were retained for analysis. The reported educational statuses of the gay and heterosexual men, respectively, were: high school or less (6%; 7%); some college or associates degree (33%; 29%); college degree (29%; 32%); graduate/advanced degree (32%; 32%).

Study 3: 2012 TV Viewing Habits Survey. Only participants completing the survey through the NBCnews.com (80%) and the Today.com (7%) websites were retained for analysis. The Today.com sample was retained because this is also a widely accessed news website, receiving 23 million visits per month (per similar-web.com as of 6/1/2014). The reported educational statuses of the gay and heterosexual men, respectively, were: high school or less (5%; 9%); some college or associates degree (33%; 33%); college degree (38%; 31%); graduate/advanced degree (24%; 27%). Eight participants who indicated “not applicable” to questions regarding their appearance or weight satisfaction were excluded from analyses. Analyses examining correlates of body image (personality, attachment style, self-esteem, life satisfaction, TV viewing) for gay, lesbian, bisexual, and heterosexual men and women are presented in a separate manuscript (Frederick, Sandhu, et al., 2016).

Study 4: 2006 Sex and Relationship Survey. Only participants completing the survey through NBCnews.com (89%) were retained for analysis. The educational statuses of the gay and heterosexual men respectively, were: high school or less (6%; 7%); some college or associates degree (30%; 30%); college degree (41%; 39%); graduate/advanced degree (23%; 24%). The reported ethnicities of gay and heterosexual men, respectively, were: White (89%; 90%), Black (2%; 3%), Hispanic (4%; 3%), Asian (2%; 2%), and Other (3%; 2%). Sample sizes were too small among gay men to compare body image across different ethnicities (all $n_s < 35$).

Study 5: 2011 Money, Sex, and Love Survey. Only participants completing the survey through NBCnews.com (79%) were retained for analysis. The educational statuses of the gay and heterosexual men, respectively, were: high school or less (5%; 7%); some college or associates degree (30%; 30%); college degree (45%; 40%); graduate/advanced degree (20%; 23%).

Survey Measures

All of the measures and associated Likert scales or response options are presented in Table 2. We have organized the presentation of the measures in Table 2 according to the research hypothesis.

Overview of continuous measures. On the continuous measures assessing body satisfaction, higher scores indicate better body image (e.g., How dissatisfied or satisfied are you with your “physical appearance?” 1 = *Very dissatisfied*, 4 = *Neutral*, 7 = *Very satisfied*). For the items assessing perceived social pressures (Objectification, Surveillance, Media Pressure, Social Comparison), higher scores indicated more perceived pressure.

Past research has used Likert scale anchors to group participants together in order to classify them as having poor or positive body image if they scored below or above the neutral point on the Likert scale. For example, Cash and Henry (1995) classified women as having negative body image if they scored below the neutral point on a 5-point Likert scale (1–2.99) used in the Appearance Evaluation measure (Cash, 2000). In addition to using the continuous measures in regression and ANOVA analyses, we also conducted supplementary

analyses where we created categorical variables. For example, we present the percentage of individuals who fell at different thresholds on the Likert scales, such as *Dissatisfied* (1–3), *Neutral* (4), and *Satisfied* (5–7) with their physical appearance (see Table 3).

We then created a series of categorical variables by recoding response options into a Poor Body Image category where the end of the scale indicating poor body image or behaviors/attitudes typically predictive of poor body image (e.g., high appearance surveillance) was contrasted with the rest of the scale. The Poor Body Image category for each variable was coded as 1 and the reference category was coded as 0. For instance, the Physical Appearance items from Study 2 (1 = *Very dissatisfied*, 4 = *Neutral*, 7 = *Very satisfied*) was treated as a continuous outcome variable for most analyses, but for some analyses they were recoded as Poor Body Image (scores of 1–3 = 1) versus Not Poor Body Image (scores of 4–7 = 0). As another example, endorsing Agree (scores of 3–4 = 1) on the Surveillance item from Study 2 was recoded into the Poor Body Image category, while Disagree (scores of 1–2 = 0) was recoded as Not Poor Body Image. These categorical variables were created with the goal of communicating results in percentages that will be intuitive to readers from a wide variety of fields and to enable supplementary analyses not based on assumptions of interval data. We use the term predictors or indicators of poor body image in this manuscript as a short-hand descriptor for people who indicated body dissatisfaction, scored high on predictors of body dissatisfaction, perceived high levels of appearance-related sociocultural pressures, or engaged in body modification.

Overview of categorical measures. Some items were inherently categorical, such as the Partner Pressure item in Study 2 asking individuals if they felt pressure from their partner to lose weight (response options: 0 = *No*, 1 = *Yes*; see Table 2). These were coded so that 1 indicated engaging in body modification, experiencing appearance pressures, or experiencing low body image, and 0 indicated not engaging in body modification, not experiencing appearance pressures, or not having low body image.

Validity of One-Item Measures

The present studies had the advantage of reaching a broad sample of gay and heterosexual men, but were limited by the fact that surveys must be brief and rely on a series of one-item measures rather than longer validated instruments. Four studies establishing the validity of these measures were conducted (Sandhu & Frederick, 2015). Scores on the widely used Appearance Evaluation scale (Cash, 2000) were strongly correlated with men’s reports on the Self-Rated Attractiveness item ($r = .75$) and Comfort in a Swimsuit item ($r = .62$). Appearance Evaluation scores were also highly correlated with satisfaction with Physical Appearance ($r = .74$), Self-Rated Attractiveness ($r = .68$), and having reduced Self-Ideal Discrepancies ($r = .62$). Satisfaction with Weight was correlated with Cash’s (2000) Overweight Preoccupation Scale ($r = -.51$) and the Garner, Olmstead, and Polivy (1983) Drive for Thinness scale ($r = -.52$). Responses on the Muscularity-Oriented Body Image scale (McPherson, McCarthy, McCreary, & McMillan, 2010) were correlated with Satisfaction with Muscle Size and Tone ($r = -.40$).

Many of the items assessing appearance pressures in Study 2 of the current manuscript were taken directly from existing scales or were slightly modified from existing scales. The

Table 3
Percentage of Gay and Heterosexual Men Indicating Appearance Concerns Across Studies 1–5

	Overall		Normal weight		Overweight		Obese	
	Het	Gay	Het	Gay	Het	Gay	Het	Gay
Hypothesis 1								
Self-rated attractiveness (S1)								
Unattractive	10***	18	3***	7	8***	18	33***	58
Okay	36	34	28	32	39	40	44	31
Good	47	42	59	52	47	37	21	10
Great	7	6	10	9	6	5	2	1
Image of face (S1)								
Unattractive	3	3	2	3	2	3	4	5
Plain	19	17	18	15	18	17	24	24
Nice	64	63	64	65	66	59	63	61
Very attractive	14	17	16	17	14	21	9	10
Comfort in swimsuit (S1)								
Uncomfortable	16**	26	8***	17	14***	28	36***	59
Okay	59	53	55	55	63	55	56	37
Good	25	21	37	28	23	17	8	4
Self-conscious about weight (S1)								
Too thin	7***	12	17	19	1	2	0	0
Too heavy	41***	43	11***	19	49***	65	83***	91
No	52	45	72	62	50	33	17	9
Physical appearance (S2)								
Dissatisfied (1–3)	21***	29	9***	22	15**	25	42	49
Neutral (4)	17	14	12	10	17	15	23	23
Satisfied (5–7)	62	57	80	68	68	60	35	28
Satisfied weight (S2)								
Dissatisfied (1–3)	39	44	9***	20	34***	50	75	80
Neutral (4)	13	14	11	18	16	14	10	7
Satisfied (5–7)	48	42	80	62	50	36	15	13
Satisfied muscle size and tone (S2)								
Dissatisfied (1–3)	30***	45	19***	33	26***	44	48***	66
Neutral (4)	21	21	20	25	21	19	22	20
Satisfied (5–7)	48	34	61	42	53	37	31	14
Self-ideal discrepancy (S2)								
Disagree	59	63	32***	43	56***	75	89	86
Attractiveness rating (S2)								
Low (1–4)	8*	11	5	6	6*	11	14	20
Average (5)	28	22	20	18	25	21	40	33
Above avg (6–7)	41	38	42	43	43	38	35	33
High (8–10)	24	29	33	34	27	30	11	14
Physical appearance (S3)								
Dissatisfied (1–3)	22***	28	7*	12	12***	24	42***	60
Neutral (4)	11	10	8	10	9	9	14	11
Satisfied (5–7)	68	63	85	78	79	67	45	30
Satisfied weight (S3)								
Dissatisfied (1–3)	39	39	6	10	26***	39	73**	86
Neutral (4)	10	9	7	10	11	13	9	2
Satisfied (5–7)	52	51	87	80	63	48	19	12
Physical appearance (S5)								
Dissatisfied (1–3)	28***	33						
Neutral (4)	20	16						
Satisfied (5–7)	52	52						
Hypothesis 2								
Mirror checking (S1)								
Never	6	5	5	3	6	4	10	11
1–3 times per day	60	50	56	45	60	55	66	62
4–7 times per day	25	31	29	34	25	30	18	19
8+ times per day	9***	14	10***	18	9*	11	6	8
Interest in cosmetic surgery (S1)								
No	59	27	64	30	58	25	51	19
May be	18	22	18	24	17	22	16	17
Cosmetic only	9	19	11	23	9	15	6	8
Liposuction only	8	11	3	7	9	14	17	24
Cosmetic and liposuction	6***	21	4***	16	7***	24	10***	32
Any interest (lipo, cosmetic, or both)	23***	51	18***	46	23***	53	33***	64

Table 3 (continued)

	Overall		Normal weight		Overweight		Obese	
	Het	Gay	Het	Gay	Het	Gay	Het	Gay
Body modification (S2)								
Weight loss diet	29***	37	12***	25	28***	42	45	54
Exercise lose weight	55	57	33***	52	59	62	68	67
Diet pills	5***	12	2***	10	5***	12	9**	19
Had cosmetic surgery	1***	7	2***	6	2***	8	1***	9
Considered cosmetic surgery	12***	36	10***	40	11***	33	14***	31
Any modification	63***	72	41***	65	66	74	78	83
Hypothesis 3								
Objectification (S2)								
Agree	61***	77	63***	81	59*	70	63**	79
Surveillance (S2)								
Agree	39***	58	39***	60	38***	59	41	47
Social Comp. (S2)								
Agree	51***	68	52***	72	50*	60	50***	71
Media Pressure (S2)								
Agree	29***	58	27***	60	28***	55	33***	61
Partner Pressure (S2)								
Yes	10*	6	3	2	8	9	18*	9
Hypothesis 4								
Undress in Front of Partner? (S1)								
No	5**	7	5	6	4	6	6	12**
Hide During Sex (S1)								
Chest	1***	4	1***	3	1***	3	2***	8
Stomach	14***	28	7***	21	16***	37	24***	40
Butt/Thighs	2***	5	2***	5	1***	3	2***	7
Genitals	4***	5	4	5	3	3	4***	10
Other	2***	4	3**	5	2***	4	1***	4
Nothing	80***	61	85***	66	79***	56	71***	50
Avoid Sex (S4)								
Yes	5***	20	2***	16	4***	21	10***	32

Note. The statistical significance indicates whether there was a difference between gay and heterosexual men in the percentage falling in the poor body image category versus all other categories. Chi-square tests or Fisher's exact tests were conducted for these comparisons. For example, on the self-rated attractiveness item, fewer heterosexual than gay men reported feeling unattractive. The number next to each question indicates the study that this question came from (e.g., S4 indicates the item came from Study 4). S1 = Study 1; S2 = Study 2; S3 = Study 3; S4 = Study 4; S5 = Study 5.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Social Comparison item was taken directly from the Body Comparison Scale (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1991). The Surveillance item is a slight modification of an item on the Objectified Body Consciousness Scale (McKinley & Hyde, 1996; the original item was "During the day, I think about how I look many times"). The Media Pressure item was similar to an item on the Social Attitudes Toward Appearance Questionnaire-4 (Schaefer et al., 2015; the original item was "I feel pressure from the media to improve my appearance"). The Objectification item is related to surveillance, but is also relevant to the Body Evaluation subscale of the Interpersonal Sexual Objectification Scale, which assesses the extent to which people experience appearance-related harassment, but using experiences more common among women (e.g., sexist comments, leering, whistling; Kozee, Tylka, Augustus-Horvath, & Denchik, 2007).

Correlations between each item and the relevant validated scale were: Social Comparison–Body Comparison ($r = .62$), Media Pressure–SATAQ-4 Media Pressure ($r = .68$), Objectification–Body Evaluation ($r = .08$), Surveillance–Surveillance ($r = .65$), Objectification–Surveillance ($r = .30$). These modest to strong correlations provide increased confidence in these items. The lack of association between Body Evaluation and Objectification for men is

likely due to the fact that the validated measure assesses experiences more common for women (e.g., being honked at while walking down the street) rather than the aspect of objectification assessed in our item (how much people feel judged on their appearance).

Data Analysis Strategy: A Focus on Effect Sizes

To test the hypotheses, we conducted a series of linear regressions on continuous outcome variables and logistic regressions with dichotomous outcome variables. This enabled us to test whether gay and heterosexual men differed in body image when controlling for the continuous BMI variable (Hypotheses 1–4). In the regressions, we tested the interactions between BMI and sexual orientation to examine whether differences between gay and heterosexual men varied by BMI (Hypothesis 5). Multicollinearity did not appear to be a notable concern for any analysis (VIFs = 1.01 to 2.25; Tolerances = .54 to .99).

We also examined whether gay and heterosexual men differed in mean body image and the percentage reporting body dissatisfaction, both in the overall sample and at different levels of BMI. To do so, for some analyses, we divided participants into the medicalized BMI categories promoted by the National Institutes of Health (NHLBI Obesity Education Initiative, 1998): "normal"

weight (18.5–24.9), “overweight” (25–29.9), and “obese” (30+). “Underweight” (<18.5) groupings were not created due to small sample sizes in the gay male samples.

Although it is common practice to treat Likert scales as interval so that means can be calculated and linear regressions can be conducted, we treated several items as continuous that likely lacked some key properties of interval scales, particularly in Study 1. On the other hand, skewness (10–.60) and kurtosis (10–1.08) were all within commonly accepted ranges. Additionally, we found no major discrepancies in any of the differences between heterosexual and gay men when using nonparametric tests versus parametric tests and thus only report results based on parametric tests.

Due to the fact that numerous statistical tests were conducted and thus Type I errors may be a concern, we highlight whether the results were statistically significant at the $p < .05$, $.01$, or $.001$ levels. Given our large sample sizes, even miniscule effects can emerge as statistically significant. Thus, we elected to highlight statistically significant results when they reflect β values greater than 1.09, Cohen’s d greater than 1.19, and odds ratios (OR) of 1.50 or greater (or $.75$ or less). What is considered a small, moderate, or large effect size can vary dramatically based on the research question of interest. As a very rough guide, Cohen (1988) suggests that effect size d can be interpreted as small (.20), moderate (.50), or large (.80; Cohen, 1988). Chen, Cohen, and Chen (2010) suggested that OR s of 1.68, 3.47, and 6.71 were considered equivalent to small, medium, and large effect sizes. Ferguson (2009, p. 533) suggested somewhat higher thresholds for what should be considered the “recommended minimum effect size representing a ‘practically’ significant effect for social science data” ($d = .41$, $OR = 2.0$, β or $r = .20$). He also specified rough guidelines for moderate effects ($d = 1.15$, $OR = 3.0$, β or $r = .50$) and strong effects ($d = 2.70$, $OR = 4.0$, β or $r = .80$).

Results

Overview of Table and Figures

Table 1 presents the key demographics for each survey. Table 2 presents all of the items, response options for each item, and the reference category for the Poor Body Image category for each item. Table 3 presents the percentage of heterosexual and gay men who were dissatisfied with their appearance and who experienced high perceived sociocultural pressures in Studies 1–5. The linear regressions (see Table 4) and logistic regressions (see Table 5) show the associations of age, sexual orientation, and BMI with the body image measures.

Figure 1 presents the Cohen’s d effect sizes and asterisks represent p values from t tests comparing gay and heterosexual men on the continuous body satisfaction variables in the overall sample and within each BMI group. Figure 2 presents this same information for continuous variables measuring appearance-related objectification, surveillance, pressures, and the impact of body dissatisfaction on sex life.

Hypothesis 1: Gay Men Will Report Lower Body Satisfaction

Body dissatisfaction was common among gay and heterosexual men, with one fifth to nearly one half of men reporting dissatis-

faction with physical appearance, weight, or muscle/tone size across both the studies (see Table 3). Mean differences were generally small (see Figure 1).

Consistent with our hypothesis, sexual orientation was a significant predictor of 10 out of the 11 continuous body image variables in linear regression analyses (see Table 4). With the exception of Image of Face ($\beta = .03$) and Attractiveness Rating ($\beta = .00$), the effect sizes were all in the direction of gay men reporting poorer body image. The effect sizes, however, were small. The two items with the largest effects were the Satisfied with Physical Appearance item ($\beta = -.11$) and the Satisfied with Weight item ($\beta = -.10$), both from Study 3. On the categorical body image items (Table 5), gay men reported being significantly more self-conscious about being Too Heavy ($OR = 2.04$, $p < .001$), but were not more likely to feel Too Thin ($OR = .70$).

Hypothesis 2: Gay Men Will Report Greater Investment in Appearance and Interest in Body Modification Strategies

Many heterosexual and gay men reported exercising (HM = 55%; GM = 57%) and dieting (HM = 29%; GM = 37%) to lose weight in the past year, but interest in cosmetic surgery was less common (see Table 3). Consistent with the hypothesis, gay men were more likely to report appearance investment and body modification on seven of the eight categorical variables assessing interest in body modification strategies (exception: Exercise to Lose Weight). As shown on Table 5, in logistic regression analyses, gay men were substantially more likely to have Had Cosmetic Surgery ($OR = 7.28$) express Interest in Cosmetic Surgery, ($OR = 4.34$), and Consider Cosmetic Surgery ($OR = 3.96$).

Hypothesis 3: Gay Men Will Report More Appearance-Related Objectification, Vigilance, and Pressure

As shown on Table 3, many heterosexual and gay men reported feeling appearance-related objectification, vigilance, and pressure, including Objectification (HM = 61%; GM = 77%), Social Comparison (HM = 39%; GM = 58%), Surveillance (HM = 51%; GM = 68%), and Media Pressure (HM = 29%; GM = 58%). Consistent with the hypothesis, comparisons of means (see Figure 2) and linear regression analyses (see Table 4) of the continuous measures showed that gay men reported more appearance-related objectification, surveillance, and pressures, but only Media Pressure exceeded $\beta = 1.09$. In contrast to the hypothesis, sexual orientation did not predict reported pressure from partners to lose weight ($OR = .94$; Table 5).

Hypothesis 4: Gay Men Will Report More Impacts of Body Image on Their Sex Lives

Relatively few men reported behaviors indicative of body dissatisfaction during sex (see Table 3). Consistent with the hypothesis, gay men hid significantly more body parts during sex on the Body Parts Hidden item in Study 1 ($d = .47$, Table 3; $\beta = .11$, Table 4). As shown on Table 5, gay men were not more likely to avoid undressing in front of their partner ($OR = 1.12$), but were more likely to hide at least one aspect of their bodies during sex

Table 4
 Linear Regressions With BMI, Sexual Orientation (S.O.), and Age Predicting Body Image

	Hypothesis 1: Body satisfaction					
	Self-rated attractiveness (S1) (+)	Image face (S1) (+)	Comfort swimsuit (S1) (+)	Satisfied appearance (S2) (+)	Satisfied weight (S2) (+)	Satisfied muscle (S2) (+)
	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$
S.O. (<i>Het</i> = 0)	-.06 ^{***} _[.01]	.03 ^{**} _[.01]	-.07 ^{***} _[.01]	-.04 ^{***} _[.02]	-.03 ^{***} _[.02]	-.06 ^{***} _[.02]
BMI	-.31 ^{***} _[.01]	-.04 ^{***} _[.01]	-.27 ^{***} _[.01]	-.43 ^{***} _[.02]	-.65 ^{***} _[.02]	-.30 ^{***} _[.02]
BMI ²	-.10 ^{***} _[.01]	-.05 ^{***} _[.01]	-.07 ^{***} _[.01]	.00 ^{***} _[.01]	.07 ^{***} _[.01]	-.01 ^{***} _[.01]
S.O. × BMI	-.08 ^{**} _[.05]	.01 ^{***} _[.05]	-.02 ^{***} _[.05]	.14 ^{**} _[.10]	-.13 ^{**} _[.09]	.11 [†] _[.11]
S.O. × BMI ²	.00 ^{***} _[.02]	-.06 ^{***} _[.03]	-.01 ^{***} _[.03]	-.06 ^{***} _[.06]	-.07 ^{***} _[.06]	-.01 ^{***} _[.06]
Age	.01 ^{***} _[.01]	-.06 ^{***} _[.01]	.02 ^{***} _[.01]	.10 ^{***} _[.01]	.06 ^{***} _[.02]	.11 ^{***} _[.02]
S.O. × Age	.04 ^{***} _[.06]	-.02 ^{***} _[.06]	.05 ^{***} _[.06]	-.12 ^{***} _[.02]	.13 ^{***} _[.09]	-.03 ^{***} _[.11]
Model $F^2_{[Adj. R]}$	766 ^{***} _[.16]	58 ^{***} _[.02]	488 ^{***} _[.11]	370 ^{***} _[.18]	844 ^{***} _[.34]	178 ^{***} _[.10]

	Hypothesis 1: Body satisfaction				
	Self-ideal discrepancy (S2) (+)	Attractive rating (S2) (+)	Satisfied appearance (S3) (+)	Satisfied weight (S3) (+)	Satisfied appearance (S5) (+)
	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$
S.O. (<i>Het</i> = 0)	-.04 ^{***} _[.02]	.00 ^{***} _[.02]	-.11 ^{***} _[.04]	-.10 ^{***} _[.04]	-.02 ^{**} _[.01]
BMI	-.55 ^{***} _[.02]	-.26 ^{***} _[.02]	-.45 ^{***} _[.04]	-.70 ^{***} _[.04]	—
BMI ²	.04 ^{***} _[.01]	-.03 ^{***} _[.01]	-.02 ^{***} _[.03]	.06 ^{***} _[.02]	—
S.O. × BMI	.07 ^{***} _[.09]	.00 ^{***} _[.10]	.00 ^{***} _[.14]	-.04 ^{***} _[.09]	—
S.O. × BMI ²	-.01 ^{***} _[.06]	.00 ^{***} _[.06]	.00 ^{***} _[.08]	.06 [†] _[.05]	—
Age	.02 ^{***} _[.02]	-.01 ^{***} _[.02]	.03 ^{***} _[.05]	.02 ^{***} _[.03]	-.02 ^{**} _[.01]
S.O. × Age	.07 ^{***} _[.10]	.04 ^{***} _[.11]	-.08 ^{***} _[.12]	.00 ^{***} _[.08]	-.05 ^{***} _[.06]
Model $F^2_{[Adj. R]}$	578 ^{***} _[.26]	162 ^{***} _[.09]	127 ^{***} _[.22]	321 ^{***} _[.41]	6.9 ^{***} _[.00]

	Hypotheses 3: Objectification, vigilance, and pressure				Hypothesis 4: Sex life
	Objectification (S2) (-)	Surveillance (S2) (-)	Social comparison (S2) (-)	Media pressure (S2) (-)	# Body parts hidden (S1) (-)
	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$	$\beta_{[2SE]}$
S.O. (<i>Het</i> = 0)	.05 ^{***} _[.02]	.06 ^{***} _[.02]	.06 ^{***} _[.02]	.12 ^{***} _[.02]	.12 ^{***} _[.01]
BMI	.04 ^{***} _[.02]	.06 ^{***} _[.02]	.02 ^{***} _[.02]	.08 ^{***} _[.02]	.13 ^{***} _[.01]
BMI ²	.03 ^{***} _[.01]	.01 ^{***} _[.01]	-.01 ^{***} _[.01]	-.01 ^{***} _[.12]	.02 ^{***} _[.01]
S.O. × BMI	-.01 ^{***} _[.10]	.13 ^{***} _[.11]	.01 ^{***} _[.11]	.02 ^{***} _[.11]	.12 ^{***} _[.01]
S.O. × BMI ²	.02 ^{***} _[.06]	.00 ^{***} _[.07]	.01 ^{***} _[.07]	-.05 ^{***} _[.07]	-.01 ^{***} _[.05]
Age	-.19 ^{***} _[.02]	-.19 ^{***} _[.02]	-.16 ^{***} _[.02]	-.14 ^{***} _[.02]	-.11 ^{***} _[.03]
S.O. × Age	.06 ^{***} _[.11]	-.08 ^{***} _[.11]	-.05 ^{***} _[.11]	-.08 ^{***} _[.11]	-.07 ^{***} _[.01]
Model $F^2_{[Adj. R]}$	81 ^{***} _[.05]	72 ^{***} _[.04]	51 ^{***} _[.03]	60 ^{***} _[.04]	169 ^{***} _[.04]

Note. Adjusted R^2 is presented for linear regressions. Effect sizes are reported for each predictor (standardized regression weight β). Heterosexual men were coded as 0 and gay men were coded as 1, so positive β s indicate that gay men scored higher on the measure. Items with a (+) indicate that higher scores on the outcome variables represent better body image (e.g., higher scores on self-rated attractiveness indicate better body image). In these cases, when β s are negative, this means that heavier, gay, and older men report poorer body image. Items with a (-) indicate that lower scores on the outcome variables represent more positive body image. In these cases, when β s are negative, this means that heavier, gay, and older men report worse body image or greater appearance related pressures. The numbers in brackets represent two times the standard errors for β values for calculating the 95% confidence interval. For example, the confidence interval for sexual orientation as a predictor of self-rated attractiveness is $-.05$ to $-.07$ (i.e., $\beta = -.06$ [$+/- .01$]). S1 = Study 1; S2 = Study 2; S3 = Study 3; S4 = Study 4; S5 = Study 5.

* $p < .05$. ** $p < .01$. *** $p < .001$.

($OR = 2.89$) and to avoid sex in the past month due to body dissatisfaction ($OR = 6.28$).

Hypothesis 5: Sexual Orientation Differences in Body Image Will Vary by BMI

Although overweight and obese men consistently reported poorer body satisfaction relative to normal weight men (see Table 3), the magnitude of the difference between gay and heterosexual men typically did not vary by BMI. This was true

for both the linear BMI by sexual orientation interactions (11 significant interactions out of 30) and curvilinear BMI by sexual orientation interactions (5 significant interactions out of 30). In the few cases where there was a statistically significant interaction, the effects were generally small: β values exceeded $l.09l$ for only five interactions of the linear regressions analyses (see Table 4). Contrary to our hypothesis, however, these differences between heterosexual and gay men were not always larger among heavier men. For example, differences between

Table 5
Logistic Regressions With BMI, Sexual Orientation (S.O.), and Age Predicting Body Image

	Hypothesis 1: Body satisfaction		Hypothesis 2: Body modification		
	Weight: Feel too heavy S1 (-)	Weight: Feel too thin S1 (-)	Mirror checking (S1) (-)	Interest in cos. surgery (S1) (-)	Weight loss diet (S2) (-)
	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]
S.O. (<i>Het.</i> = 0)	2.07 ^{***} _[1.76, 2.44]	.70 _[.33, 1.52]	1.66 ^{***} _[1.35, 2.04]	4.34 ^{***} _[3.73, 5.06]	1.84 ^{***} _[1.36, 2.50]
BMI	5.73 ^{***} _[5.45, 6.02]	.04 ^{***} _[.03, .05]	.94 ^{***} _[.89, .99]	1.27 ^{***} _[1.23, 1.30]	2.42 ^{***} _[2.28, 2.58]
BMI ²	.84 ^{***} _[.81, .87]	.58 ^{***} _[.52, .65]	.91 ^{***} _[.87, .94]	.99 _[.98, 1.01]	.83 ^{***} _[.81, .85]
S.O. × BMI	1.06 _[.86, 1.29]	.63 _[.18, 2.16]	.83 _[.68, 1.02]	1.04 _[.92, 1.18]	.82 _[.63, 1.07]
S.O. × BMI ²	1.01 _[.85, 1.20]	.92 _[.57, 1.48]	.88 _[.76, 1.02]	.97 _[.90, 1.05]	.99 _[.84, 1.16]
Age	.93 ^{***} _[.90, .96]	.70 ^{***} _[.66, .74]	.61 ^{***} _[.58, .64]	1.02 _[.99, 1.04]	.95 ^{***} _[.90, .99]
S.O. × Age	.85 [*] _[.73, .99]	1.06 _[.83, 1.34]	.98 _[.80, 1.20]	.86 [*] _[.75, .99]	.82 _[.64, 1.05]
Model $\chi^2_{[R^2]}$	9837 _[.41]	4478 _[.37]	598 _[.05]	970 _[.05]	1071 _[.13]

	Hypothesis 2: Body modification				
	Exercise lose weight (S2) (-)	Diet pills (S2) (-)	Had cosmetic surgery (S2) (-)	Considered cos. surgery (S2) (-)	Any body modification (S2) (-)
	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]	OR _[95% CI]
S.O. (<i>Het.</i> = 0)	1.18 _[.87, 1.60]	2.59 ^{***} _[1.61, 4.15]	7.28 ^{***} _[4.08, 12.98]	3.96 ^{***} _[2.93, 5.36]	1.46 ^{**} _[1.04, 2.03]
BMI	2.30 ^{***} _[2.18, 2.42]	2.55 ^{***} _[2.23, 2.91]	.86 _[.71, 1.04]	1.27 ^{***} _[1.18, 1.36]	2.43 ^{***} _[2.30, 2.56]
BMI ²	.77 ^{***} _[.75, .80]	.81 ^{***} _[.76, .86]	1.01 _[.91, 1.13]	.96 [*] _[.93, 1.00]	.79 ^{***} _[.77, .81]
S.O. × BMI	.75 [*] _[.59, .95]	.65 [*] _[.46, .93]	1.42 _[.84, 2.39]	.78 [*] _[.62, .99]	.68 ^{**} _[.51, .89]
S.O. × BMI ²	1.06 _[.91, 1.23]	1.17 _[.96, 1.43]	.87 _[.61, 1.23]	1.05 _[.91, 1.21]	1.19 _[1.00, 1.41]
Age	.75 ^{***} _[.72, .79]	.63 ^{***} _[.58, .69]	1.31 ^{**} _[1.10, 1.55]	.93 [*] _[.88, .99]	.81 ^{***} _[.78, .85]
S.O. × Age	.94 _[.74, 1.20]	.96 _[.66, 1.39]	1.17 _[.72, 1.89]	.99 _[.78, 1.26]	1.06 _[.82, 1.37]
Model $\chi^2_{[R^2]}$	1193 _[.13]	347 ^{***} _[.09]	55 ^{***} _[.03]	175 ^{***} _[.03]	1272 ^{***} _[.14]

	Hypothesis 3: Pressures		Hypothesis 4: Sex life		
	Partner pressure (S2) (-)		Not undress w/ partner (S1) (-)	Hide during sex (S1) (-)	Avoid sex past month (S4) (-)
	OR _[95% CI]		OR _[95% CI]	OR _[95% CI]	OR _[95% CI]
S.O. (<i>Het.</i> = 0)	.94 _[.49, 1.80]		1.12 _[.78, 1.61]	2.89 ^{***} _[2.51, 3.32]	6.28 ^{***} _[4.69, 8.40]
BMI	2.55 ^{***} _[2.30, 2.83]		.94 _[.88, 1.00]	1.42 ^{***} _[1.37, 1.48]	2.07 ^{***} _[1.91, 2.24]
BMI ²	.85 ^{***} _[.81, .89]		1.15 ^{***} _[1.11, 1.19]	1.00 _[.98, 1.02]	.93 ^{***} _[.90, .97]
S.O. × BMI	.57 _[.35, .95]		1.18 _[.93, 1.49]	.98 _[.88, 1.10]	.82 _[.63, 1.05]
S.O. × BMI ²	1.15 _[.83, 1.58]		1.15 _[1.01, 1.32]	.95 _[.89, 1.03]	.98 _[.84, 1.14]
Age	.94 _[.88, 1.02]		.88 ^{***} _[.82, .94]	.75 ^{***} _[.72, .77]	.83 ^{***} _[.78, .88]
S.O. × Age	.78 _[.46, 1.31]		.94 _[.66, 1.34]	1.00 _[.87, 1.14]	.89 _[.68, 1.17]
Model $\chi^2_{[R^2]}$	536 _[.10]		96 ^{***} _[.01]	991 ^{***} _[.06]	801 ^{***} _[.08]

Note. Nagelkerke R^2 is presented for logistic regressions. Effect sizes are reported in the form of odds ratios (OR). Heterosexual men were coded as 0 and gay men were coded as 1, so ORs greater than 1 indicate that gay men scored higher on the measure. Items with a (-) indicate that lower scores on the outcome variables represent more positive body image. In these cases, when ORs are above 1.0, this means that heavier, gay, and older men are more likely to engage in this behavior. The numbers in brackets represent the 95% confidence intervals for the ORs. S1 = Study 1; S2 = Study 2; S3 = Study 3; S4 = Study 4; S5 = Study 5.

* $p < .05$. ** $p < .01$. *** $p < .001$.

gay and heterosexual men in whether they Considered Cosmetic Surgery or reported Any Body Modification were most pronounced among normal-weight men.

General Discussion

Summary of Key Findings

Overall, the results from the present studies support our first four hypotheses. Relative to heterosexual men, gay men typically reported greater body dissatisfaction, investment in appearance

and interest in body modification strategies, appearance-related pressures and social comparisons, and impact of body image on their sex lives. The results of the present studies did not support our fifth hypothesis: BMI did not reliably moderate the association between sexual orientation and body image. BMI, however, was a potent predictor of body dissatisfaction in both gay and heterosexual men, with heavier men experiencing greater body dissatisfaction than thinner men.

Taken together, there is a pattern of statistically significant differences in reported body image between gay and heterosexual men. Similar to prior research, effects were generally small to medium in

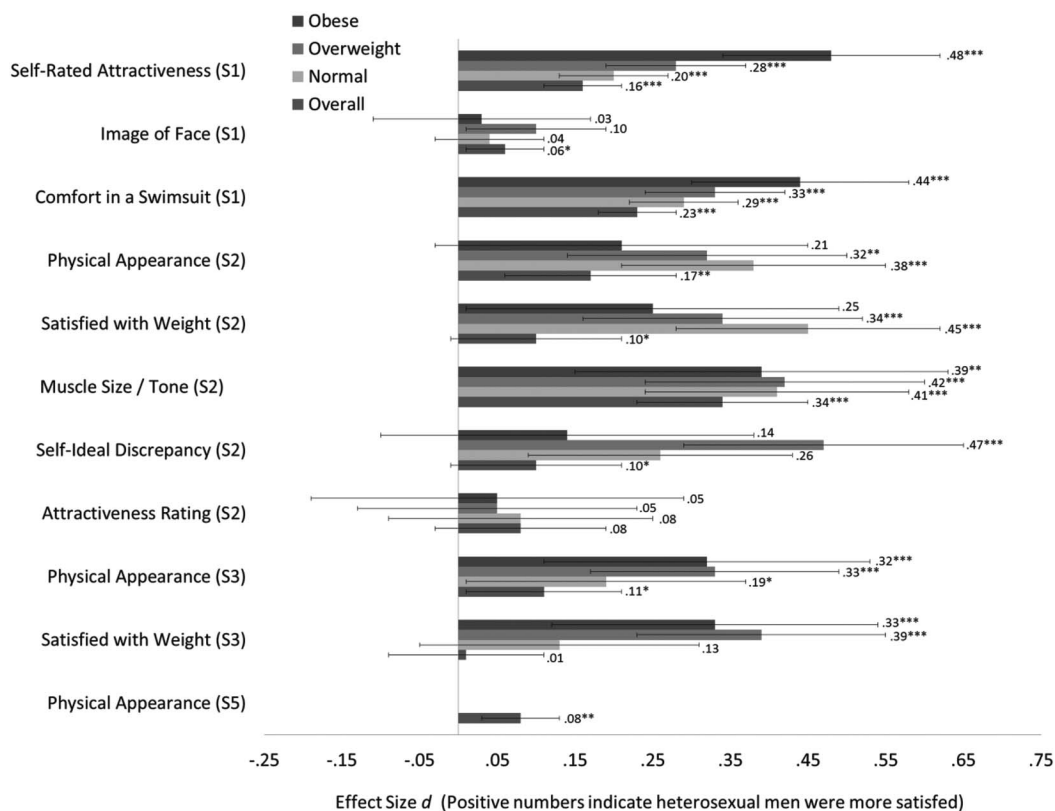


Figure 1. Effect sizes (Cohen's *d*) for differences in body satisfaction between gay and heterosexual men in the overall sample and in different BMI groups. * $p < .05$. ** $p < .01$. *** $p < .001$.

size (Calzo, Corliss, Blood, Field, & Austin, 2013; Morrison et al., 2004). The larger effect sizes on some items suggest that certain indicators of body image are both theoretically and practically meaningful. More gay men than heterosexual men reported dissatisfaction with their muscle size and tone, which is concerning because dissatisfaction with muscularity is associated with poorer mental health and risky behaviors. Male adolescents who have sex with members of the same sex are more likely than heterosexual adolescents to misuse anabolic steroids (Blashill & Safren, 2014), and men who have sex with men who are more dissatisfied with their muscularity are more likely to use methamphetamine (Jampel, Safren, & Blashill, 2015; Theodore, Achiro, Duran, & Antoni, 2011).

More substantial differences between gay and heterosexual men were observed on variables assessing investment in appearance and interest in body modification strategies. The largest differences were observed on the three items assessing interest and prior experiences with cosmetic surgery. Some of the largest effects in the present studies were observed on items assessing appearance-related objectification, vigilance, and pressures. Consistent with past research, gay men were much more likely to report experiencing pressure from the media to have a more attractive body (Austin et al., 2004; Carper et al., 2010; McArdle & Hill, 2009). Additionally, small to moderate effect sizes were observed on the surveillance, objectification, and social comparison variables. These findings support the hypothesis that there are differences between gay and heterosexual men on appearance-related pressures and comparisons identified by sociocul-

tural theory, objectification theory, social comparison theory, and the tripartite influence model.

Consistent with our hypotheses and past research (Peplau et al., 2009), gay men also indicated that body dissatisfaction negatively impacts their sex lives to a greater extent than heterosexual men. Future research should explore how feelings about one's body are linked to both avoidance of sex and pursuit of sex. For instance, people who feel negatively about their body can be more prone to seek out sexual partners who will affirm their attractiveness, and some research suggests that gay men with poorer body image engage in riskier sexual behaviors (Blashill, Goshe, Robbins, Mayer, & Safren, 2014; Blashill & Safren, 2015; Brennan et al., 2015).

The extent of differences in body image between gay and heterosexual men varied according to the specific indicator being assessed. Although differences in body dissatisfaction were small, more substantial differences were identified for perceived appearance pressures, body modification behaviors, and the impact of body image on sexual behavior. It may be the case that the small but consistently elevated levels of body dissatisfaction reported by gay men drive them to pursue body modification. The larger effect sizes between gay and heterosexual men on these appearance-related pressure items may be a result of gay men experiencing greater pressure to attain certain body ideals because they are attempting to attract men, and face increased exposure to objectified media featuring men. Furthermore, heterosexual men may feel more confined to gender norms than gay men, causing them to be less comfortable pursuing "feminine" ap-

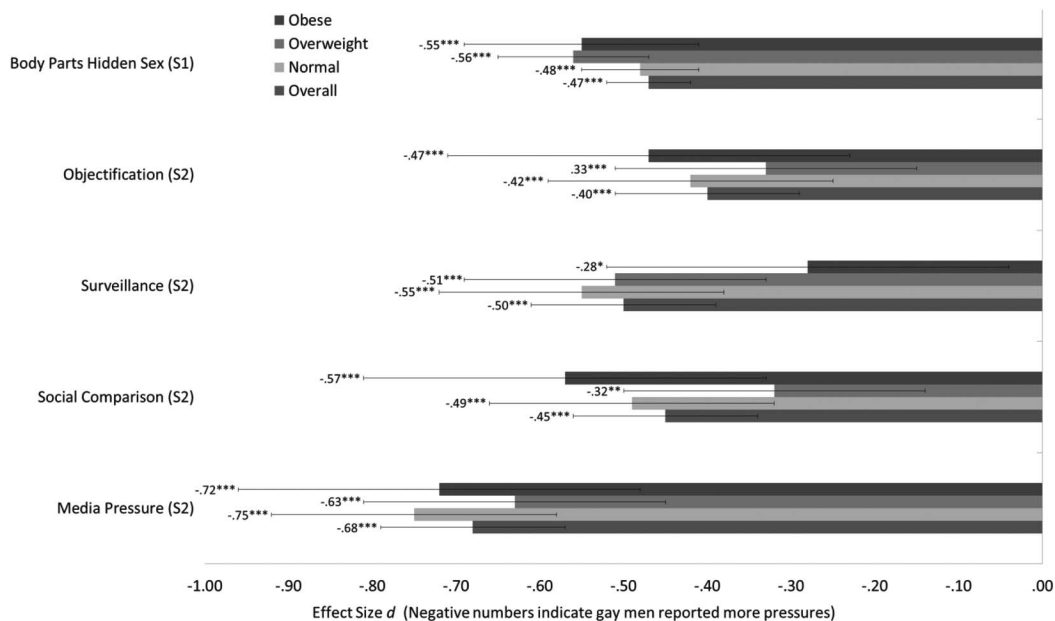


Figure 2. Effect sizes (Cohen's d) for differences in perceived appearance pressures and discomfort with sex between gay and heterosexual men in the overall sample and in different BMI groups. * $p < .05$. ** $p < .01$. *** $p < .001$.

pearance modification techniques (e.g., cosmetic surgery) and weight loss behaviors (e.g., use of diet pills).

Overall, our findings indicate gay men report poorer body image on certain variables, which may increase risk for disordered eating, dangerous body modification strategies, and other unhealthy behaviors. The vast majority of research investigating prevention programs targeting body dissatisfaction and eating disorders has neglected men (Yager & O'Dea, 2008). The results of the present study converge with much of the prior literature to suggest that body image prevention and intervention programs should include men in general, and gay men in particular. These interventions will likely need to be revised to address the specific manifestations of body dissatisfaction in men, rather than simply including men in programs that were designed for women (e.g., Rabak-Wagener, Eickhoff-Shemek, & Kelly-Vance, 1998). Published research describing treatment or prevention programs addressing body image in gay or heterosexual men is virtually nonexistent, and is clearly an area for further study.

Further research would also benefit from expanding upon the findings that larger effects emerge on body modification strategies by investigating a greater variety of behavioral indicators of body dissatisfaction (e.g., skipping meals, excessive exercise). More research exploring body image in other sexual minority groups is also needed (e.g., transgender individuals, bisexual men and women). As much as possible, future studies should aim to recruit sexual minority participants with the same procedures employed to obtain heterosexual participants.

Limitations and Strengths

Self-selection into surveys is a typical problem in studies conducted with college and community samples. The generalizability of the findings is limited by the fact that participants were visitors

to a news website who self-selected into this sample. Further, it was not possible to examine the association of ethnicity to body image, and the demographics reported in Study 4 suggest that these samples consist of primarily White men.

Internet samples, however, have the advantage of being more diverse with respect to gender, sexual orientation, age, socioeconomic status, and geographic region than convenience samples of students (Gosling, Vazire, Srivastava, & John, 2004). Surveys can be completed with ease from the privacy of respondents' homes or workplaces, reaching individuals who would not otherwise have the opportunity to participate in research. In contrast to much of the prior research, heterosexual and gay participants were not recruited from different sources (e.g., classrooms vs. political activist groups).

Although the studies were not nationally representative, the large sample size provided sufficient power to examine differences after segmenting participants into different BMI categories. One concern with the BMI analyses is that participants may inaccurately report their height and/or weight. However, a review of 64 studies on self-reported versus directly measured height and weight found that self-report measures differ only slightly from people's actual heights and weights (Gorber, Tremblay, Moher, & Gorber, 2007). Systematic biases in responses across participants, however, could be problematic if gay men or heterosexual men tend to have different biases when reporting their weight.

Another limitation was that the studies relied on a series of one-item measures. The fact that the items were correlated with validated measures and that the findings for body satisfaction were consistent across studies increases confidence in the results, particularly for items that yielded strong correlations (e.g., Self-Rated Attractiveness; Sandhu & Frederick, 2015). Additional validation

of the measures would be valuable given that one-item measures are sometimes necessary when conducting large-scale studies. In particular, it would be informative to engage in additional validation of the Objectification item, which was only weakly correlated with an existing measure that was primarily designed to measure women's objectification experiences.

Concluding Comments

The present paper summarizes the results of five large-scale studies that included sizable samples of gay men and identical recruitment of gay and heterosexual men. In contrast to the conclusions drawn by some recent reviews (Kane, 2009, 2010), we suggest that sexual orientation is a relevant and important predictor of body image concerns among men, but the extent of the difference varies depending on the aspect of body image assessed. The findings highlight the importance of investigating body modification, objectification, and appearance-related pressures in future research comparing gay and heterosexual men. More generally, regardless of sexual orientation, many men reported experiencing body dissatisfaction and appearance-related pressures, and this was particularly true of men with higher body masses. These studies highlight the importance of addressing body image concerns among all men.

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Correction to Frederick and Essayli (2016)

In the article “Male Body Image: The Roles of Sexual Orientation and Body Mass Index Across Five National U.S. Studies” by David A. Frederick and Jamal H. Essayli (*Psychology of Men & Masculinity*, Advance online publication, February 11, 2016. <http://dx.doi.org/10.1037/men0000031>), there was an error in Table 3. The “Satisfaction with Muscle Size and Tone” results were switched for the gay men and heterosexual men for the percent who are “Satisfied” with their muscle tone and size in the “Overall” column. The error is limited to this one instance and does not affect any of the main text or interpretations of the results that were described. The correct figures for heterosexual men are: 30% of heterosexual men were dissatisfied with their muscularity, 21% neutral, 48% satisfied. The correct figures for gay men are: 45% of gay men were dissatisfied with their muscularity, 21% neutral, 34% satisfied. All versions of the article have been corrected.

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